

DRAFT

Talking Points

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Kickoff Meeting – Technical Challenges of Plug-In Hybrid Electric Vehicles and Impacts to the U.S. Power System

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- Thank you very much for the kind introduction. I am delighted to be here and have the opportunity to provide brief remarks on the perspectives of the U.S. Department of Energy on this very important project.
- A major focus of my office is America's electric delivery system. This system includes the equipment that brings electricity into our homes, offices, and factories, and the federal and state electricity policies and programs that shape electric system planning and market operations. We also coordinate closely with the Department of Homeland Security and others to bolster the resiliency of the grid and assist with restoration when major energy supply interruptions occur.
- One of our roles involves research, development, demonstration, analysis, and technology transfer of "next generation" electricity delivery technologies. On the supply side, advanced electricity delivery technologies are essential for clean energy devices such as renewables, clean coal, and nuclear power. On the demand side, advanced electricity delivery technologies are essential for energy efficiency devices, demand response, and advanced transportation systems such as electric and plug-in hybrid electric vehicles.
- Our priorities include high temperature superconducting technologies, utility-scale power electronics and energy storage, visualization and controls for real time grid management, and the integration of renewable and distributed energy systems with grid planning and operations. Our efforts in these areas are aimed at solving critical national needs including:
 - the reliability of the electric system
 - cyber security to prevent unwanted disruptions of the electric and other energy networks
 - economic competitiveness and jobs creation
 - environmental protection, including reduction of greenhouse gas emissions
 - and with PHEVs the problem of oil import dependence

- DOE's FreedomCAR and Vehicle Technologies Program have embarked on a research and development effort to accelerate the technology and market readiness of plug-in hybrid electric vehicles. The President's Advanced Energy Initiative highlights development of PHEVs with emphasis battery technologies, including performance, life time, and costs. In the 2007 State-of-the-Union address, the President said "We need to press on battery research for plug-in and hybrid vehicles." This is planned to be a multi-million \$ efforts to be conducted over the next decade.
- As we move forward with this RD&D several critical questions need to be addressed about PHEVs and the grid.
 - What happens to the electric grid if this important program achieves its RD&D goals?
 - What happens when there are hundreds of thousands, if not millions, of electric and hybrid electric vehicles needing outlets to recharge their batteries with electricity from the grid?
 - What power delivery technologies, tools, and techniques will be needed to protect the electric system and provide seamless "plug&drive" opportunities for consumers?
 - How will the nation develop and deploy smart grid systems for interoperability, dynamic pricing, distributed generation and storage, and demand response?
- Answering these questions is paramount for the promise of PHEVs to be realized. And that promise offers enormous potential benefits for America:
 - reductions in oil imports from fueling our cars with home-grown electricity rather than gasoline from foreign trouble spots
 - reductions in greenhouse gas emissions from the use of clean power systems such as renewables, clean coal, and nuclear energy
 - and improvements in urban air quality from vastly lower tailpipe emissions
- We're very pleased with the team we have in place to do this study.
 - Pacific Northwest National Laboratory has been a world leader in the investigation of the feasibility of "smart grid" technologies and evaluating the potential benefits of PHEVs

- University of Michigan is a world class institution and provides outstanding capabilities in engineering and economic analysis of electric and transportation systems
- General Motors and the Ford Motor Company are global leaders in advanced transportation technologies, including electric and hybrid vehicles as well as fuel cell vehicles and hydrogen energy systems
- DTE is one of America's most innovative electric power companies and is involved in many projects to develop next generation and smart grid systems
- This project is a key part of my office's overall strategy to work with electric utilities, manufacturers, other government agencies, universities, and national laboratories to help modernize America's electric delivery system. Imagine the possibilities:
 - easy delivery of a wide array of customized and cost-effective clean energy choices for consumers
 - automated grid operations with near-zero economic losses from outages and power quality disturbances
 - flourishing markets for the world's best and cleanest electricity services
 - and all this from a new electricity delivery infrastructure built on smart grids, clean power, and advanced technologies such as PHEVs
- While the challenges are great, the opportunities are even greater. We look forward to working with you to create a more prosperous, clean, and secure electricity future for America.